

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/013549

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C07K14/47 C07K14/00 A61K6/033 A61K7/16

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, WPI Data, PAJ, BIOSIS, EMBASE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/103004 A (LEVY, ROBERT, J; ALFERIEV, IVAN; FISHBEIN, ILIA) 27 December 2002 (2002-12-27) page 8; figure 1; example 1a	1,17-24
Y		8
X	PATENT ABSTRACTS OF JAPAN vol. 018, no. 118 (C-1172), 25 February 1994 (1994-02-25) & JP 05 310544 A (CHISSO CORP), 22 November 1993 (1993-11-22) abstract	3-5,26, 27
Y		8
A	WO 02/094204 A (THE UNIVERSITY OF MELBOURNE; REYNOLDS, ERIC, CHARLES; TYAS, MARTIN, JO) 28 November 2002 (2002-11-28) page 1 - page 2; claims 1-29 ----- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

16 March 2005

Date of mailing of the international search report

09-08-2005

Name and mailing address of the ISA

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PCT/EP2004/013549

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 015 628 A (REYNOLDS ET AL) 14 May 1991 (1991-05-14) the whole document	
A	----- REYNOLDS E C: "REMINERALIZATION OF ENAMEL SUBSURFACE LESIONS BY CASEIN PHOSPHOPEPTIDE-STABILIZED CALCIUM PHOSPHATE SOLUTIONS" JOURNAL OF DENTAL RESEARCH, INTERNATIONAL ASSOCIATION FOR DENTAL RESEARCH, US, vol. 76, no. 9, September 1997 (1997-09), pages 1587-1595, XP008028054 ISSN: 0022-0345 the whole document	
A	----- ADAMSON NJ & REYNOLDS EC: "Characterization of Tryptic Casein Phosphopeptides Prepared Under Industrially Relevant Conditions" BIOTECHNOLOGY AND BIOENGINEERING, vol. 45, 1995, pages 196-204, XP002321313 the whole document -----	

## INTERNATIONAL SEARCH REPORT

International application No.  
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### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
5, 8, 17-24 (completely) and 1, 3, 4, 26, 27 (partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 5,8,17-24 (completely) and 1,3,4,26,27 (partially)

bisphosphonylated-epsilon-polylysine, methods and uses thereof; use of proteins that are bisphosphonylated and use of epsilon-polylysine or polylysine

- 1.1. claims: 8,17-24 (completely) and 1,3,4,26,27 (partially)

bisphosphonylated-epsilon-polylysine, methods and use thereof

- 1.2. claims: 3,4,26,27 (all partially)

use of proteins that are bisphosphonylated

- 1.3. claims: 5 (completely) and 3,4,26,27 (partially)

use of epsilon-polylysine or polylysine

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2. claims: 12,13 (completely) and 1,3,4,26,27 (partially)

casein phosphopeptide epsilon-polylysine copolymer, methods and uses thereof

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3. claims: 16 (completely) and 1,3,4,26,27 (partially)

hydrolyzed phosvitin that has been conjugated to epsilon polylysine, methods and uses thereof

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4. claims: 10,11 (completely) and 1,3,4,26,27 (partially)

casein phosphopeptide that has been polymerized with a carbodiimide, methods and uses thereof

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5. claims: 6,7 (completely) and 1,3,4,26,27 (partially)

phosvitin that has been hydrolyzed with trypsin, pepsin or a combination of both, methods and uses thereof

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6. claims: 2,9,14,15 (completely) and 3,4,26,27 (partially)

chitosan hydrolysate that has been conjugated with casein phosphopeptide, methods and uses thereof; use of copolymers containing hydrolyzed chitosan

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7. claims: 25 (completely) and 3,4,26,27 (partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

use of biscalboxylated epsilon-polylysine,  
3-hydroxy-phthalated epsilon-polylysine or proteins that are  
biscalboxylated; method to produce 3-hydroxy-phthalated  
epsilon-polylysine  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/013549

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 02103004 A	27-12-2002	WO 02103004 A1 US 2003044408 A1	27-12-2002 06-03-2003
JP 05310544 A	22-11-1993	JP 3114359 B2	04-12-2000
WO 02094204 A	28-11-2002	WO 02094204 A1 BR 0209875 A CA 2447751 A1 EP 1397106 A1 JP 2004531553 T NZ 529566 A US 2005063922 A1 ZA 200309124 A	28-11-2002 20-04-2004 28-11-2002 17-03-2004 14-10-2004 19-12-2003 24-03-2005 24-11-2004
US 5015628 A	14-05-1991	AT 132161 T AU 593365 B2 AU 7548387 A WO 8707615 A1 BR 8707352 A CA 1315480 C DE 3751652 D1 DE 3751652 T2 DK 70388 A EP 0268663 A1 FI 880629 A ,B, FI 931988 A ,B, HU 47309 A2 JP 7076235 B JP 63503459 T MC 1862 A NO 880589 A ,B, NZ 220673 A	15-01-1996 08-02-1990 11-01-1988 17-12-1987 13-09-1988 30-03-1993 08-02-1996 25-07-1996 11-04-1988 01-06-1988 11-02-1988 03-05-1993 28-02-1989 16-08-1995 15-12-1988 19-12-1988 06-04-1988 28-05-1990